



Is macroeconomics dead?

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Abstract:

Several economic experts address the question of whether the field of macroeconomics has reached a point of intellectual chaos and become irrelevant.

Full Text:

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[Headnote]

Has the field of macroeconomics reached a point of intellectual chaos? Okun's Law (for every percentage point the unemployment rate falls, real GNP rises by 3 percent) and the so-called NAIRU (identifying a non-accelerating inflation rate of unemployment) had provided a kind of twin-pillar support system of certainty for macroeconomic theory. Have these twin pillars been toppled and, if so, what is left to support the intellectual underpinnings of efforts to measure the macroeconomic direction of an economy? Has the macroeconomic field lost its compass?

Mainstream macroeconomists should be embarrassed. Why? Because their old wardrobe is out of style and they aren't comfortable in the new fashions. What mainstreamers do best is spew out mathematical models. Who's paying attention, besides their captive graduate students?

Mainstreamers can adeptly explain the familiar magnitudes - inflation, employment, GDP growth - but only after the fact. "Success" comes at a price: Their models are so numerous that they can account for almost any outcome after it has happened. But macroeconomists aren't getting better at prediction. Even if they were, flatter business cycles in OECD countries spell dwindling attention to the familiar magnitudes.

What excites interest these days are other magnitudes, many of them financial in nature. Topping the list is stock market valuation. And why not? When equity values exceed 150 percent of GDP, when equities are widely held, and when plans to rescue Social Security are linked to future stock market valuations, it's natural that everyone from Alan Greenspan to the local newscaster wants an answer. The fact that Irving Fisher mistakenly argued 70 years ago that "stock prices have reached what looks like a permanently high plateau" shouldn't consign the stock market to astrology.

Right after stock market fascination comes the exchange rate, particularly dollar/euro/yen relationships. Again fancy models abound, but where are the useful predictions? Then there are episodic financial crises in emerging markets. Finally come the really big questions: how to free poor countries from the grip of predatory economics, how to promote the drivers of total factor productivity, how to spread the "new economy" into Europe and Japan?

Who offers serious comment on these matters? A few mainstream macroeconomists, like Robert Shiller, but more often financial analysts who live and die by equity and FX markets, such as Abby Joseph Cohen, David Hale, John Lipsky, and Ed Yardeni, unsung intelligence analysts, or economic historians like Peter Jay or David Landes.

The answer given by macroeconomists for steering clear of financial magnitudes is that, if the discipline

was good at forecasting, its wisdom would already be reflected in the equity and FX markets. So why bother? The answer for dodging the big questions - predatory economics, TFP growth, and the new economy - is that they can't be analyzed with theoretical rigor. These answers may be right, but they point towards irrelevance.

I learned macroeconomics before either Okun's Law or NAIRU had been formulated. It was useful then, and it is useful now. Macroeconomics should be conceived as a framework of analysis, a perspective, and not a fixed set of empirical rules. Macroeconomics has no rigorous microeconomic underpinnings, and cannot have them because of the diversity of economic agents and the need to aggregate their behavior. It is nonetheless useful to look at the entire national (and, these days, the world) economy, and to measure and make generalizations about aggregate savings and investment, the overall impact of government spending and taxation, economic relations with the rest of the world, and so on.

Empirical generalizations are transitory, good ones lasting years rather than decades. They will slowly change. The NAIRU is an empirical generalization with little theoretical underpinning that can naturally be expected to change over time. This is a development that should neither surprise nor distress us. It is even malleable by policy, not a law of nature. This is similar with Okun's Law, which relates total slack in the economy to a particular measurement of unemployment. These are best considered empirical rules of thumb, not "pillars," much less "compasses," with their implication of an unchanging north pole.

Samson may have been blind in his latter years, but he pulled down the right pillars and destroyed the Philistine temple. But neither Okun's Law nor the NAIRU were the pillars on which modern macroeconomics is based. Therefore, even if those two pillars (or perhaps, more accurately, "posts") are demolished, macroeconomics will survive, if not prosper.

As someone who works both sides of the street, I certainly do not view the matter as microeconomics versus macroeconomics. Microeconomics is, of course, a powerful set of tools to deal with a host of important cost, pricing, production, and profit relationships at the firm, product, and market levels.

Simultaneously, macroeconomics, as currently organized and practiced, provides useful ways of thinking about such aggregate - and hardly trivial - matters as inflation, unemployment, and economic growth. Macroeconomics permits us to examine the forest rather than the trees so we can ascertain the more general patterns of an economy. It is, in effect, a bird's eye view rather than a worm's eye view. Just as microeconomic concepts and modes of analysis are the essence of the economist's involvement in regulatory policy, macroeconomic concepts - such as consumption, saving, investment, productivity, and money supply are basic in dealing with questions of monetary and fiscal policies.

On a more mundane level, the basic tools of macroeconomics provide a valuable overview or general outline of the economy and of the relationships among the major sectors that constitute economic activity as a whole. Thus, our ability to understand general trends and developments in the economy is enhanced.

Personally, I find the national income and product accounts the single most useful construct - the compass - for tracking aggregate economic developments, integrating a host of statistics on various aspects of economic activity, and analyzing macroeconomic issues and alternative policies for dealing with them.

Macroeconomics is not, in any of its manifestations, a cookbook for developing answers to fundamental problems facing the economy of the United States or of any other nation. But surely the tools of

microeconomics do not suffice for these purposes either.

On occasion, I have felt misled by practitioners who enthusiastically preach a specific or rather narrow brand of macroeconomic thought (be it Keynesian, supply-side, monetarist, or other). Nevertheless, such disappointments have not been the occasion for abandoning the aggregative approach altogether. In the final analysis, I have found no satisfying substitute for a combination of organized judgment and good luck in dealing with important economic issues.

The current problem with macroeconomics, as it is studied by academic researchers, is an excess of theoretical underpinnings - not a deficiency. Over the last twenty years, they have come to practice a religion in which it is considered necessary to derive mathematically all behavioral relationships from "first principles of optimization" on the part of individuals. This is now accepted as the definition of scientific rigor.

Meanwhile, the behavior of the actual economy has deviated far from the pillars of macroeconomic theory. Such deviations of reality from theory are not new. More precisely, the deviations are not new. Nor are their magnitudes - only the form they have taken. In the 1970s, the deviations were all in the bad direction. Productivity growth was lower than forecast. Inflation was higher than predicted, given weak output and employment. The demand for money was lower than expected, given interest rates. The budget was worse than forecast, and so on. Over the last seven years, in contrast, the deviations have all been in the good direction. Productivity growth is higher than projected, inflation is lower, output and employment higher than expected, the budget has improved, and so on. Those who defended existing theory in the 1970s promised that things were bound to get better, as traditional economic relationships reasserted themselves. Those who defended the theory in the 1990s warned that things were bound to get worse.

The statistical fit between the predictions of theory and the behavior of the economy has never been good. It is a myth that the numbers used to follow obediently the dictates of the equations, and that the relationships broke down only subsequently. But just because the models don't work as well in macroeconomics as they do in physics is no reason to give up the attempt. And (unfortunately) society is more interested in what we have to say about macroeconomics, as imperfect as it is, than what we have to say about microeconomics.

Where do underpinnings that are derived from the rigorous theory of individual optimization come in? The hope is that such "microfoundations" will yield better predictions as to how the economy will behave when undergoing fundamental structural changes. Such predictions are necessary. Unfortunately, the twenty-year track record of actual delivery on this promise is poor. When a macroeconomist is faced with a familiar theoretical relationship that seems to fail the statistical tests, all too often the tendency is to pronounce the theory "ad hoc" and pursue a strategy of burying oneself in microfoundation underpinnings. The resulting mathematics seldom produces predictions that correspond more closely to the real data. Indeed, the mathematics usually produces no testable empirical predictions whatsoever. But this is precisely the attraction of the research strategy, in the sense of Darwinian survival. It enables the researcher to avoid confronting the shortcomings of his craft.

Macroeconomics is certainly not dead. It has reached an intellectual maturity where it can be used to guide policy without grand battles between monetarists and Keynesians or the other warring sects to which its practitioners felt compelled to subscribe in the past. The results are plain to see: in the unprecedented length of the Greenspan expansion in the United States, the new maturity of monetary policy-making in Britain under the Bank of England's Monetary Policy Committee, and the solid start made by the European Central Bank. These practitioners do not rely on black magic or consultations with oracles - they employ macroeconomic models supplemented by macroeconomic reasoning. They

are a living example of economists who have become the "humble, useful people, like dentists" that Keynes once urged our profession to aspire toward. (Admittedly Keynes did not lead by example in this respect.)

Perhaps it is true that the intellectual underpinnings of the discipline are not in as good shape as the practical superstructure. Many academic macroeconomists still seem to grant the real business cycle approach a degree of credence that, in my view, it does not deserve. But the earlier challenges to macro theory, like monetarism and rational expectations, have been sifted and synthesized successfully. Nowadays, we all agree that it is important that policy be time-consistent. The empirical evidence seems to say that a change in public savings is offset about 60 percent by a change in private savings, rather than the zero of naive Keynesianism or the 100 percent of Ricardo-Barro, and most macroeconomists are content to accept that the facts have spoken rather than engage in an ideological battle about the matter. Issues are resolved by research rather than ideology.

I find it extraordinary that anyone should think of Okun's Law and the NAIRU as having constituted twin certainties that provided the intellectual underpinnings of macroeconomic theory. Okun's Law is an empirical regularity, not a basic article of faith, and so what if its parameters change? The NAIRU plays a more basic role, and it is clear that its parameters have indeed changed in recent years. But then, many of us never did believe the NAIRU to be a natural constant: We used to hope it could be changed by incomes policy. That may have been naive, but the work of Edmund Phelps is pointing toward a more robust explanation in terms of the organization of the labor market.

I see no need to apologize for macro theory. Maybe its intellectual underpinnings will one day prove to be as shaky as those of Newtonian physics ultimately were. But what we already have is pretty serviceable, just as Newtonian physics was. Let us not deride, and fail to use, macroeconomics as we know it today.

The editors ask whether macroeconomics is dead, wondering, I suppose, whether they have to discontinue their fine journal for lack of anything important to say. In particular, they ask what will become of applied macro without the twin pillars of Okun's Law and the NAIRU to support it. The NAIRU model is indeed in shambles, but that is as it should be. It does not work at all in periods of low inflation and high unemployment and never did. Moreover, even before giving erroneous signals about the potential of the U.S. economy in the 1990s, it did not account for the U.S. stagflation of the late 1970s. And it could only be made to resemble performance in Europe by inventing ways to let NAIRU closely track actual unemployment, which emptied the model of content. One big problem is that the NAIRU model oversimplifies the role of expectations in the inflation process. For a richer alternative model and evidence that macro still lives, I urge readers to look at "Near Rational Wage and Price Setting and the Long Run Phillips Curve," in the latest Brookings Papers on Economic Activity.

As for Okun's Law, its insights are as relevant as ever. Productivity, labor force participation, and average weekly hours continue to vary with the cyclical state of the economy, and the beauty of the Law is its recognition of these endogenous things. Policymakers would do well to recognize them. But to get a current rule-of-thumb version of Okun's Law requires current knowledge about productivity trends and the like. When Art Okun formulated the original, forty years ago, he did not really expect his quantitative estimates would still work today.

Two last thoughts on life in macroeconomics: First, one area where events may have gotten ahead of our understanding is the interface of finance and economics. This is particularly so in the international sphere, where the movement of capital has become so much freer. Second, we should recognize that quantitative relations change and appreciate the uncertainty this brings to forecasts and long-term projections.

If all this means researchers have a lot to offer practitioners, that's another sign macro is alive and well.

The last several years have proven that the U.S. economy can grow at 5 percent or better with low unemployment and with inflation remaining in check. Technology and services have created millions of new jobs. Let's hope the Federal Reserve allows it to continue.

Macroeconomics, with its focus on NAIRU, maximum sustainable growth, and so on, while interesting in theory, has become clearly outdated. Economic and financial models of the past fail to account for the new realities: open markets and technology.

The United States is no longer an island. It is part of an increasingly integrated world economy, an economy more open than ever and more driven by information technology, especially the Internet. These two factors have brought greater competition and that competition has kept prices in check. Competition for goods and services works wonders when markets are open and when protectionism and inefficient state-owned or protected monopolies are in decline.

Today, information technology allows a dimension in supply-chain integration. New exchanges for goods and services have created buyer and seller efficiencies never before contemplated by the Old Economy. New information transparency has shifted power to the buyer, whether individual, business, or government. Pricing power by business has been materially reduced as competition feeds demand with new and cheaper supply and choices.

In today's economy, inflation is less likely to be driven by demand-pull as it is by excessive cost-push. Tight labor markets in the United States, accompanied with rising wage costs, have been offset by productivity gains largely enabled by technology. The biggest cost-push pressure in the last several months comes from energy and from the Fed itself. Old economic models and the ageold policy tools of interest rates and tight money can lead the Fed to be its own worst adversary. Remember that money is a commodity, too, and its cost has been raised six times in the last year.

We are only in the early stages of seeing the Internet's positive impact on economic growth and standards of living worldwide. Developing countries will be able to leapfrog into the economic mainstream with wireless communications and other technologies. Better, faster information fosters better markets - faster and better supply to meet new demand while building more jobs. The new world environment bodes well for an expanded period of impressive growth with low inflation, provided that old economic theories don't disrupt the power of open markets and the new competitive information-based society.

In 1994, forecasters expected inflation to accelerate as unemployment declined below 6 percent. Yet for six solid years, unemployment has been below that magic number and core inflation has yet to rise. Forecasters were also surprised that real GDP grew more than 4 percent per year after 1995 while unemployment declined a mere 0.4 percent per year. These forecast errors do not mean that macroeconomics is dead. The fraternal twins of macroeconomics, the Phillips Curve, and Okun's Law, are alive and well.

Take Okun's Law: With the benefit of hindsight and new, higher estimates of potential GDP growth after 1995, the apparent errors in Okun's Law forecasts are easy to explain. Okun's Law relates the change in cyclical unemployment to the gap between actual and potential GDP growth - that gap was smaller after 1995 than forecasters believed at the time. Okun's Law forecast errors correctly signaled that the growth of potential GDP had risen. The failure of a naive NAIRU model, with a time-invariant "natural rate," to forecast a decline in core inflation reflects both the theoretical flaws of an

oversimplified approach to inflation and the inability of forecasters to predict the unpredictable.

Macroeconomists have always understood that the rate of unemployment, compatible with stable inflation at a given time, can be affected by supply shocks. Phillips Curve equations invariably incorporate such factors. The second half of the 1990s saw: (1) a noticeable moderation in employer health insurance costs after 1994; (2) falling prices for both oil and non-oil imports due to a weak world economy and strong dollar between 1996 and 1998; (3) methodological changes that reduced CPI-inflation by about 0.6 percent per annum between 1994 and 1999; and (4) an acceleration in productivity growth after 1995 so that, despite low unemployment, unit labor costs are now barely rising. After two decades of slow real wage growth, workers' real wage aspirations have not yet caught up with new economy reality. Unlike the first three shocks, which have either ebbed or reversed, faster productivity growth may exert a longer lasting effect on the Phillips Curve tradeoff.

A reduced form relationship like the Phillips Curve will also shift as a consequence of structural shifts in the economy. Significant changes have occurred in job matching, domestic and global outsourcing, unionization, and the flexibility of work and pay arrangements. Increased job insecurity may have moderated wage bargains. If unemployment remains low enough and long enough, the Phillips Curve could also shift because of the gain in worker skills during the expansion.

The Phillips Curve reflects the simplest of economic truths: All else equal, lower unemployment brings higher inflation. Forecast errors no more invalidate this principle of economics than would a failed prediction of price repeal the law of supply and demand.

Francis Fukuyama wrote a controversial article in the summer 1989 issue of *The National Interest* titled, "The End of History?" He argued that the ideological battle between capitalism and communism was over. The clear winner was capitalism. The clear loser was communism. To the extent that history consists mostly of epic struggles between opposing forces, the triumph of capitalism also marked the end of history.

In the same spirit, I would like to propose a simple notion: Macroeconomics is dead. The end of the Cold War and the triumph of capitalism also marked the triumph of microeconomics over macroeconomics. This is an unfortunate division in the economics profession. As a result, macroeconomists often fail to understand the impact of changes in market structure and industrial organization on the overall economy. They tend to promote an elitist (Keynesian) notion that they can fine-tune the economy from on high, while the little people go about their daily business.

My major premise is that our economic present is better understood, and our economic future more accurately predicted, by a model from the microeconomics textbooks rather than from the macroeconomics textbooks. The "new paradigm" is actually a very old model called Perfect Competition. Out go the Keynesian, monetarist, and other macro models.

In a perfectly competitive marketplace, there are no barriers to entry for new firms, no protection from failure, and all relevant information is costly available to all - all the time. This simple model is fairly static and needs to be combined with models of economic growth. It also needs to be more dynamic to reflect the impact of technological innovation. Despite these limitations, this textbook model of perfect competition has probably never been more relevant than it is today.

If perfect competition is the "new" model that best explains aggregate economic activity, then inflation may be dead too. In the New Globally Competitive Economy, companies are under enormous pressure to reduce their marginal costs so that they can offer consumers the lowest prices. To be profitable,

companies must constantly increase productivity and innovate.

If inflation is dead, then the Traditional Business Cycle may also be dead. I would argue that the most widely accepted business cycle model, for example, NAIRU, is especially irrelevant now. The notion that tight labor markets lead to higher inflation is exactly backward. Low inflation resulting from greater competition leads to low unemployment. In the past, uncompetitive market conditions exacerbated inflation, which then led to high unemployment. So, in my opinion, NAIRU has always been dead wrong.

YES for NAIRU as a guidepost for economic policy and for the Phillips Curve as a relevant description of goal conflicts. YES also for the view that monetary policy can stimulate growth in the long run instead - its role is to provide stable money. YES finally in that debt-financed expansionary fiscal policy has become ineffective as a policy means because the accumulated debt will have its negative impact on expectations. But definitively NO for other areas of macroeconomics: We still want to know how an economy grows, how capital is built, how human capital is accumulated, why the population increases or shrinks, how the supply side, for example, the production potential, changes over time, and how it interacts with the demand side. To explain the business cycle, unemployment and growth will continue to be fascinating topics. This also holds for the question of which effects monetary policy has. Financial and currency crises are major topics. We will continue to be interested in macroeconomic restraints, for the government (budget), for a country (balance of payments), and over time (inter-temporal budget constraints, for instance, in the pension systems). We will also be eager to know how the economy adjusts if imbalances in these restraints become apparent.

Perhaps it is because I am basically an academic, but I have had a hard time believing that macroeconomics is dead. However, I am willing to look beyond Okun's Law and NAIRU for pillars of support for the macroeconomy; for example, I don't think that anyone has suggested that business cycles or the laws of supply and demand have been toppled. Demand curves still slope down and supply curves still slope up - that is, prices still matter. Perhaps we have just raised and flattened economic business cycles a bit with improved productivity and the proverbial soft landing.

As a finance type, however, I admit to falling into the more pragmatic camp of economists. Studying and analyzing the financial markets is a particularly humbling specialty, which is why I find myself constantly questioning the assumptions underlying economic theories to find out why observations appear to deviate from forecasts based on theory. Specifically, while both Okun's Law and NAIRU describe some rather simplistic relationships between inflation and unemployment variables, neither is comprehensive enough to take into account the multitude of variables in the complex global economies we now face. In other words, for these two theories to deliver their relevant tradeoffs, there is an awful lot of *ceteris paribus* at work. At best, Okun's Law and NAIRU probably only approximate tradeoff relationships within a given range of assumptions including, among other things, exchange rates, productivity, time frame, and absence of supply or demand shocks. Relax any of these assumptions, and the implicit relationship or implied rule of thumb likely breaks down or is at least altered. Even the broader formulation of the Phillips Curve model suffers from inadequate or unreal underlying assumptions.

But it seems to me that the richness of macroeconomic theory encompasses an analysis of the assumptions and how they affect the theoretical relationships. For example, what is a relevant time frame in which to examine relationships between employment and inflation? Are there other dispositive variables at work? How long is the long term? How do varying international inflation rates affect potential domestic inflation/unemployment tradeoffs? With the breakthrough in information systems and communications technology and the generally acknowledged commensurate improvement in productivity, is the length of the growth cycle considerably altered? The factors underlying e-business

act almost like a favorable supply shock, resulting in an elevated, elongated business cycle. The benefits of improved inventory and supply-chain management have been well documented and probably also dampen business cycles.

Back to the question at hand: The theoretical relationships between unemployment and inflation, suggested by Okun's Law and NAIRU, can most readily be identified over traditional business cycles. But if we have moved into a virtuous economic cycle, complete with soft landings and sustainable growth, it is hard to identify tradeoffs involving unemployment or inflation. The theory could still hold, but the time dimension has simply been expanded. We may just be exploring the long part of new economy - long and variable lags.

After monetarism, Keynesianism, "post" versions of each, macroeconomics settled down for a time to aim at one target, inflation, with one gun, the short-term interest rate. That had been widely agreed upon among central bankers and macroeconomists until recently when new goals, according to Jan Tinbergen's rule of equal numbers of weapons to targets, needed more politics. It is sometimes possible to kill two birds with one stone, but not every day.

The revived targets from yesteryear include asset prices, the exchange rate, capital flows, the balance of payments on current account, the output gap between actual output, and the full-employment potential. Most of these can be subsumed under inflation-targeting as intermediate goals, as stock market booms may forecast inflation of goods and services, as some think, or exchange depreciation may spill over from raising the prices of traded exports and imports to goods and services. Large deficits may lead to exchange depreciation, and so on.

Old weapons, including Regulation T, manipulate margin requirements on stock market speculation. Regulation T has been denigrated by Paul Volcker and Alan Greenspan on the ground that speculators can leverage their purchases by other credit, or by dealing in futures and options in which margins are low and not under macroeconomic control. James Tobin's proposal for a tax on capital outflows again appears to be a nonstarter, readily evaded by dealing abroad. Central bank intervention in exchange markets proved not to work well in the Quantum Fund attack of 1992 and 1993 on sterling and the lira. Monetary and fiscal policies have lamentably failed to close the output gap in Japan that opened up after 1990.

Despite failure and pessimism, all is not lost. There have been outstanding successes since the Black Monday stock market of October 19, 1987, for example, the bailout of Long Term Capital Management in September 1998, the progress achieved in reviving the Asian Tigers (ex-Indonesia), despite the criticism of Joseph Stiglitz and Jeffrey Sachs, and the progress of the B.L.S.'s Basel Commission on Banking Supervision. Problems remain, notably African indebtedness. But the Karl Popper parsimony of one goal, inflation, and one weapon, the short-term interest rate, is giving way to real-world complexity, and the need again for growing up.

Macroeconomic theory was never very lively, if living means being able to forecast turning points in the business cycle. But it would be wrong to believe that we have not learned anything about how the world works. Certainly, the economy has been much more stable since World War II than before, and it is reasonable to believe that has something to do with the Federal Reserve being less prone to large errors. It is hard to imagine repeating the ill-advised, extreme monetary tightening that deepened the Great Depression. It is perhaps less certain, but I doubt that the Fed would again over-finance an energy price increase like that, which brought us double-digit inflation in the late 1970s. Revealing myself as a truly old fashioned Keynesian, I suspect that the growing role of entitlements in the budget also makes fiscal policy more of an automatic stabilizer.

There may be a little life left in NAIRU as well. There were other times in history when NAIRU seemed to be dead only to snap back and bite us. Labor markets in the late 1960s were tighter than today's, but real wages did not rise significantly until 1972. Low inflationary expectations bolstered by a highly credible Fed can stave off wage and price inflation for a good long time in the face of excess demand - but not forever. The slight acceleration in the employment cost index over the last year may provide an important warning.

Yet, it is disappointing that macroeconomic theory has not advanced further. Immense intellectual firepower has been devoted to improving the microeconomic foundations of macroeconomics over the last thirty years and we still don't really understand why wages and prices are sticky. Despite the intense effort to develop real business cycle theory, it seems to be from another planet. Any story without Alan Greenspan couldn't possibly be very interesting. Rational expectations theory taught us a lot, but it may ultimately be wrong. Many actors adapting their expectations slowly may now be saving us from rapidly accelerating inflation.

Most of the questions on macroeconomics exams are the same as thirty years ago. Only the answers have changed. Let me count the ways:

In the dark ages, we used to talk about the "business cycle," as if there was some inherent process that turns recessions into recoveries into recessions with some regularity. We now know, or should know, that economic growth is the natural condition and that recessions are most often the result of a policy mistake or the necessary correction of a policy mistake. It now appears that economic recoveries are best described as a random walk. In other words, the length of a recovery to date provides no useful information about the timing of the next recession.

In the dark ages, fiscal policy was considered the primary instrument of demand management. Monetary policy was believed to operate only through the effects of interest rates and was considered to be especially impotent in a recession because of "the liquidity trap." We now know, or should know, that aggregate demand is primarily a function of monetary policy. And fiscal policy should be guided and evaluated primarily by allocative and distributional concerns.

In the dark ages, we were all captive of "the Phillips Curve," believing that there was a necessary tradeoff between unemployment and inflation. We should now know that both unemployment and inflation could be reduced over time with no apparent NAIRU that would bind this relation. The long-term relation between unemployment and inflation appears to be positive, suggesting that inflation may weaken the relative price signals on which a well functioning labor market is dependent.

In the dark ages, national political officials were prepared to pay a high price in other values to maintain a fixed exchange rate, the stock of gold, or the balance of trade. The Federal Reserve rationalized the major reduction of the money supply during the early 1930s as necessary to protect the gold clause. At the height of the Cold War, President Kennedy was prepared to sanction our allies to avoid an outflow of gold. We should now know to focus macroeconomic policy on stabilizing the growth of domestic demand without worrying about exchange rates, gold, or the balance of trade. If that leaves The International Economy with fewer issues to address, so be it; maybe you should declare victory and go home.

No, macroeconomics is not dead. The current focus on the conditions and policies that contribute to economic growth is important and quite productive. But the rest of macroeconomics needs to be reformulated with careful attention to the historical record. On these issues, I believe, most U.S. economic policy officials of the past twenty years have been ahead of the textbooks.

Is macroeconomics dead? An answer, of course, presupposes a corpus of received theory, a set of rules thought to capture the complex set of interactions that generate aggregate production and prices. For the sake of argument, I'll assume that the rules presumed by the question invoke the collection of ideas generally in the category of Okun's Law, speed limits, the NAIRU, and such.

Thus understood, permit me to rephrase: "Is the idea of too much prosperity, too robust growth, and too many people working, dead?" Permit me to answer: "If it's not, it ought to be."

To briefly make the case for this assertion, consider the so-called NAIRU, that unemployment rate below which the economy may not venture without the risk of fueling inflationary fires. Although the theoretical foundations of the NAIRU are somewhat loose, I believe it's fair to think of the NAIRU as the labor market analog to industrial capacity. Low unemployment rates are therefore synonymous with tight labor markets, and tight labor markets with inflationary wage increases.

There are many problems with this idea, but I will address one in particular. I'll do so by way of a question: Why don't we seriously consider the Cleveland NAIRU? The answer to me seems obvious. Labor mobility renders meaningless the notion of the Cleveland NAIRU as an effective measure of capacity. And without the connection to capacity, it is impossible to make the leap to price pressures (even assuming that a local measure of inflation is a coherent construction).

If you agree with me on this point, the next step is a short one. As globalization accelerates and economic borders become increasingly permeable, isn't the concept of a national NAIRU equally suspect? In an environment when labor resources can be easily shifted in short order, both literally and virtually - I'm told of engineering concerns that operate on a twenty-four hour basis by passing projects to teams in different time zones around the world - is the U.S. unemployment rate any more of an accurate measure of capacity than the Cleveland NAIRU?

As I have said, this is but one of the objections I have to the NAIRU concept. The interested reader can find a more extensive discussion in the 1999 Annual Report of the Federal Reserve Bank of Cleveland. In addition, these objections apply equally to ideas about potential output, speed limits, and the like.

Is macroeconomics dead? Of course not. The really basic rules, inherent in the invisible hand metaphor of price theory, are alive and well. So is our core understanding that inflation is ultimately a monetary phenomenon, and that protecting the purchasing power of money is a central bank's surest contribution to prosperity. As for NAIRU, may it rest in peace.

Who welcomes writing off his assets? It makes no difference whether the property is physical, financial, or intellectual. If push comes to shove, our instincts rush to the defense of what we have inherited. This applies to the high priests of Okun's Law and of NAIRU as well as to those wanting to support farmers, shipyards, or coal pits in mature economies. The common disregard for the internationalization of many of our national economies and the statistical neglect of the advent of the "new economy" is recent evidence backing this view. Some argue that internationalization and the new economy mean the end of macroeconomics altogether. This is not wrong - it is rubbish. They do, however, mean the end of economic concepts confined to the nation state, and they put an end to the basic premise of moderate variations in the input/output matrix over time. With borders disappearing and production processes rapidly changing and improving, traditional parameters of economic models are anything but constants. We all see the direction in which they will change. But there is little chance of empirically assessing the degree of change. Thus, considerable uncertainty exists as to how monetary and fiscal policy should respond to the technical, organizational, and behavioral changes. It is quite obvious that the opening of national markets, particularly the creation of regional trade zones, has given rise to FDI and labor

migration. Concepts based on closed economies hence no longer apply. Old relationships between demand growth and employment - certainly those that are traditionally measured are no longer reliable, owing to new ways of organizing production processes involving a lot of outsourcing (at home and abroad, by traditional means or via IT and the Internet). The availability of the children of Nehru in Bangalore to develop software for a company headquartered in Seattle is as much a reality as the establishment of a call center in Shanghai for a Paris-based airline.

Such radical changes, as a result of political opening and new technical possibilities, make national Phillips curves obsolete. Under such circumstances, demand can grow at a higher sustainable rate without raising wage pressure and inflation, as competition then increases in labor and product (or services) markets alike.

An environment where the quantitative relationship between economic variables changes poses a challenge not only to central bankers who have to secure price stability, but also to private forecasters. That means macroeconomics is far from being dead or dying. Quite the opposite is true. If the coefficients of the economic model change, there is a large need for macroeconomic research. If central bankers underestimate production potential or overestimate NAIRU, monetary policy tightens more than necessary and curbs the chances for sound, noninflationary growth. On the other hand, testing the limit for noninflationary growth can be quite dangerous because of the long lag time of monetary policy.

During recent years, the U.S. unemployment rate has fallen far below the level of 5 percent, which was regarded as NAIRU in the past - without leading to higher inflation. Over time, NAIRU estimates were adjusted downwards. In addition, U.S. potential real growth, which was formerly estimated by the Fed to be around 2.5 percent, is now at least one percentage point higher. Technical progress fuels gains in productivity, leading to a higher potential output. However, part of the high productivity growth is likely to be cyclical.

In the euro area, unemployment is still around 9 percent, according to the ILO definition. Opinions differ as to what extent this rate is structural. In East Germany, unemployment is high, especially due to the structural adjustment process in the construction sector. The German employment threshold, which is the real GDP growth rate where employment stays unchanged, was probably around 2.5 percent during much of the 1990s.

Can we expect the German and EMU unemployment rate to come down to U.S. levels without leading to higher inflation? At the moment, this seems to be "wishful thinking" because of structural rigidities. However, goods and labor markets have become more flexible. The incentives to accept a job have increased in most of the EMU countries. The share of fixed-term contracts and part-time work in total employment has risen. In addition, lower tax burdens and liberalization of the goods markets improve employment perspectives. Therefore, it is likely that the employment threshold will lower. For Germany, it should fall below 2 percent. Moreover, there seems to be evidence that the extent to which the unemployment rate diminishes when GDP growth is higher than trend growth has increased. From late 1999 to the end of 2000, the EMU unemployment rate could fall by nearly one percentage point. That is more than one would expect from the traditional relationship between GDP growth and unemployment (Okun's Law). Given structural reforms, it is likely that EMU trend growth will surpass the ECB's present assumption of 2 to 2.5 percent. This would have important implications for monetary policy. It is still too early to reach a definite conclusion. For a long while, at least, and especially in the euro area, forecasters will have to grapple with a highly uncertain environment.

By the 1970s, mainstream macroeconomics had settled on two confident policy predictions, which docile students were expected to echo on exams. One was the "Phillips Curve" theme: that higher inflation could be traded for lower unemployment, and vice versa. The other was fiscal fetishism, for

example, that budget deficits stimulate economic growth, while surpluses are a fiscal drag.

The Phillips Curve fell victim to three bouts of stagflation by 1982, and survives today only in the zombie-like incantations of Federal Reserve officials. In truth, vigorous economic growth has never been associated with serious inflation, at home or abroad, and serious inflation has never been associated with rapid growth. Journalists' trite thermal metaphor about inflation being caused by "overheating" is the opposite of what we observe. And the idea that rapid economic growth is inflationary is microeconomic nonsense, like saying more supply raises prices.

A second macro dogma centered on the "fiscal stimulus." Adding to the debts of taxpayers was supposed to make them feel richer, and therefore more inclined to spend. Demand was also thought to create its own supply. This creed lay behind the biggest policy fad of the late 1980s, which proudly proclaimed that budget and trade deficits were inseparable "twins." Unfortunately, the once fashionable "twin deficits" theory yields the unavoidable prediction that the United States and Australia must have sizable trade surpluses by now, and Japan must have a huge trade deficit. So, the twin deficits embarrassment has simply been set aside, with no apology.

The newest macroeconomic fable completely reverses the old, arguing that economic growth is stimulated by budget surpluses, not deficits. The non-testable claim is that U.S. interest rates would have risen even more than they have since 1992, were it not for the fact that the budget swung from deficit to surplus. Why? Because every extra dollar in taxes extracted from investors and corporations is said to increase national savings by an equivalent sum. That amounts to defining taxes as savings, including taxes on savers. Never mind that U.S. savings amounted to 17.7 percent in GDP from 1983 to 1989, compared to 17.4 percent from 1993 to 1999. When such facts conflict with theory, the facts are clearly expendable.

Actually, no macro measure of "fiscal policy" bears the slightest relationship to the growth of nominal or real GDP, trade deficits, inflation, interest rates, or anything else of economic importance. This empirical irrelevance has been a boon to fiscal theorists, since it has enabled them to attribute every conceivable turn of economic fortune to deficits or surpluses.

In a recent obituary for the Keynesian ordeal, Newsweek columnist Robert Samuelson wrote that "the lure of macroeconomics lay in the illusion that it could make the whole system go smoothly almost regardless of how the economy's underlying sectors functioned." The classical, supply-side counterrevolution turned that around by predicting that destructive microeconomic distortions and disincentives must add up to a poor macroeconomic performance.

All that remains of macroeconomics is monetary theory and policy. And the best monetary economists have become far more humble than they once were about this complex topic. Although macroeconomics is dead, many macroeconomists are indeed alive, still preaching the old-time religion. But they speak a dead language.

Macroeconomic theory is indeed in disarray. Not only have the empirical underpinnings of Okun's Law and NAIRU proved much less firm than originally thought, but what might be called Milton Friedman's Law that future growth in nominal GNP can be projected from prior growth in some monetary aggregate - has also been undermined. The velocity of money has become so unstable as to make current monetary growth rates virtually useless for projecting future inflation over the short time horizon in which central banks must make decisions.

In addition, the core idea of Keynesian economics - that an activist government could continually pull

the levers of monetary and fiscal policy to offset macroeconomic shocks emanating from the private sector - has long since been discredited. Activist behavior by governments, which causes markets to become confused and people to bet in the capital and foreign exchange markets on changes in government policies, seems to be the problem rather than the solution.

One consequence of this disarray is that universities now have great trouble deciding on an appropriate syllabus in macroeconomics for beginning Ph.D. students. At Stanford University, for example, we have no consensus on what should be taught in first-year macroeconomics. Conventional issues of money, banking and finance, and fiscal policy as they affect the business cycle are being displaced by non-monetary issues: the determinants of long-run growth using massive cross-country data bases, "real" business cycle theory, intergenerational wealth transfers, and so on.

But does this intellectual disarray matter for the health of the macroeconomy and the financial system on which it is based?

Fortunately, governments have become more constrained and circumspect about what macroeconomic policy can achieve. In the major industrial countries, central banks have the narrow macroeconomic task of stabilizing the domestic price level while heading off what could be major financial crises - as with the LTCM intervention. Inflation targeting, not the level of unemployment or economic growth, has become the central bank's mandate in one country after another. And to make this inflation targeting credible, institutional changes to make central banks more independent of the present government have become popular. The new European Central Bank (ECB) seems even more independent than the U.S. Fed, with its long tradition of independence leavened by accountability to the Congress. The Bank of England has taken back the power to set short-term interest rates from the Chancellor of the Exchequer. Even the Bank of Japan has become independent of the once allpowerful Ministry of Finance.

But there are negatives too. Perhaps the most important gap in theory and policy lies in the foreign exchanges and the appropriate treatment of international capital flows. In a period of rapid globalization in trade and technology, no international money machine - with well-defined rules supports this globalization without recurrent financial crises. Despite the net abolition of ten currencies - the mark, lire, franc, peseta, and so on - with the advent of the euro on January 1, 1999, there are about 150-plus different national monies in the world economy with a great deal of uncertainty in relationships among them.

Under the world dollar standard, Americans own the central money in the system, hence they are relatively immune to the financial hurricanes that blow around them. As the world's biggest debtor economy, the United States has the luxury of going into debt in its own currency: Foreigners are willing to hold dollar-denominated bank deposits, industrial bonds, Treasury bonds, mortgages, and so on. And American-owned financial assets are almost completely dollar denominated. Thus, exchange rate fluctuations don't affect the safety of the American financial system in any direct way.

In contrast, when an emerging-market economy goes into debt, it does so in some other country's currency - usually the U.S. dollar, but it could be euros or even yen. Then exchange rate fluctuations, particularly devaluations, greatly increase the risk to that country's financial system as with the currency attacks in East Asia in 1997 and 1998. Simple inflation targeting, while ignoring the exchange rate as in the United States, is quite impossible in other countries - except perhaps in Euroland which, in a monetary sense, has become a large relatively autonomous region where exchange fluctuations with the outside world can be more or less ignored. But due to their very special position in the world economy, Americans don't fully appreciate the fact that macroeconomic management elsewhere is much more difficult.

Worldwide monetary standards - such as the international gold standard from the 1870s to 1913, or the fixed rate dollar standard under Bretton-Woods from 1950 to 1971 were quite successful in limiting exchange risk while promoting globalization. However, each of these standards had its problems and contradictions, which eventually led to a breakdown. The absence of new rules for the game linking nations together on a more stable monetary basis remains a major sin of omission in modern macroeconomics. (For an attempt to remedy the situation, see Ronald I. McKinnon, *International Money and Exchange Rates: The Rules of the Game*, MIT Press, 1996.)

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